

WHAT IS CLAIMED IS:

1. A board transferring ¹⁰ apparatus for transferring boards between the apparatus and a component-mounted board production apparatus, which comprises;

5 an unprocessed ¹² board transfer unit including an unprocessed board transfer path along which an unprocessed board as the board not processed by the component-mounted board production apparatus is transferred, and an unprocessed board carry-in ^{28, 30} device which moves between the
10 unprocessed board transfer path and the component-mounted board production ^{14 or 20, 22} apparatus thereby carrying the unprocessed board into the component-mounted board ^{20, 22} production apparatus;

15 a process-finished ³⁶ board send-out unit including a process-finished board transfer path along which a process-finished ^{12a, 12c} board as the board processed by the component-mounted board production ^{20, 22} apparatus is transferred, for carrying the process-finished board out from the component-mounted board production ^{20, 22} apparatus by moving
20 between the process-finished board transfer path and the component-mounted board production ^{20, 22} apparatus; and

a shift ¹⁸ device which moves between the unprocessed board transfer ⁴⁰ path and the process-finished board transfer ^{42, 44} path and for shifting the board between the
25 unprocessed board transfer path and the process-finished

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board transfer path.

2. The board transferring apparatus according to claim 1, wherein at least one shift device is equipped when a plurality of the component-mounted board production apparatuses are arranged in series in a transfer direction of the unprocessed board and the process-finished board.

3. The board transferring apparatus according to claim 2, further comprising a controller for controlling operations of the unprocessed board transfer unit, the process-finished board transfer unit and the shift device.

4. The board transferring apparatus according to claim 3, wherein, in a case where a plurality^{14, 16} of the component-mounted board production apparatuses for executing different processes are arranged along the transfer direction of the unprocessed board and the process-finished board, the shift¹⁸ device is disposed between a first component-mounted¹⁴ board production apparatus and a second component-mounted¹⁶ board production apparatus for executing mutually different processes, while the controller controls the shift device to shift the process-finished^{12a} board carried out from the first component-mounted¹⁴ board production apparatus to the process-finished board transfer path to the unprocessed⁵² board transfer path.

5. The board transferring apparatus according to

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claim 4, wherein the controller controls the operations of the unprocessed board transfer unit, the process-finished board transfer unit and the shift device on a basis of an arrangement of the component-mounted board production apparatus along the transfer direction and a processing program to be executed to the boards.

6. A component^{20, 22, 40, 44} mounting apparatus comprising the board transferring apparatus^{28, 30, 40, 52} according to claim 4.

7. The component mounting apparatus according to claim 6, wherein, when the first component-mounted¹⁴ board production apparatus and the second component¹⁶-mounted board production apparatus are component supply/mounting machines, and all components to be mounted to the unprocessed board having the first components and the second components, the controller makes the first component-mounted board production apparatus mount first components, the shift device carry a process-finished board with the first components mounted into the second component-mounted board production apparatus, and the second component-mounted board production apparatus mount second components.

8. A board transfer method which comprises:

carrying an unprocessed board as a board not processed by a component-mounted board production apparatus from an unprocessed board transfer path^{receiving} into the component-mounted board production apparatus^{20, 22};

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12a, 12c
 sending out a process-finished board as processed
 36
 board to a process-finished board transfer path after
 20, 22
 processing in the component-mounted board production
 apparatus; and

5 moving the process-finished board of the process-
 12a
 finished board transfer path to the unprocessed board
 52
 transfer path.

9. The board transfer method according to claim 8,
 with a plurality of the component-mounted board production
 10 apparatuses being arranged 14, 16 in series along a transfer
 direction of the unprocessed board and the process-finished
 board, between a first component-mounted board production
 14
 apparatus and a second component-mounted board production
 16
 apparatus for executing mutually different processes,
 15 moving the process-finished board carried out from the
 first component-mounted 14 board production apparatus to the
 process-finished board 36 transfer path to the unprocessed
 board transfer 52 path, and

carrying 42, 44, 52 the process-finished board into the
 20 second component-mounted board production 16 apparatus.

10. The board transfer method according to claim 9,
 in which the carrying of the unprocessed board from the
 unprocessed board transfer path to the component-mounted
 board production apparatus, the shifting of the process-
 25 finished board from the process-finished board transfer

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path to the unprocessed board transfer path, and the carrying of the process-finished board into the second component-mounted board production apparatus are controlled on a basis of an arrangement of the component-mounted board production apparatuses along the transfer direction and a processing program to be executed to the boards.

11. A board transferring apparatus for transferring boards on a board transfer path and between the board transfer path and a component-mounted board production apparatus while the component-mounted board production apparatus is disposed along the board transfer path where the boards are transferred in a transfer direction, which comprises:

a board carry-in unit which moves between the board transfer path and the component-mounted board production apparatus thereby carrying the board into the component-mounted board production apparatus;

a board send-out unit which moves between the board transfer path and the component-mounted board production apparatus thereby sending out the board from the component-mounted board production apparatus to the board transfer path;

an identifying device disposed to the board transfer path for identifying a carry-in propriety display part on the board indicative of whether or not the board

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can be carried into the component-mounted board production apparatus; and

5 a controller for determining whether or not the board is to be carried into the component-mounted board production apparatus on a basis of the identification result of the carry-in propriety display part identified by the identifying device, and controlling the operation of the board carry-in unit.

10 12. The board transferring apparatus according to claim 11, wherein, when the controller determines that the board is to be carried into the component-mounted board production apparatus on the basis of the identification result, the controller is adapted to carry the board by the board carry-in unit into the component-mounted board production apparatus, process the board by the component-mounted board production apparatus and send out the processed board to the board transfer path by the board send-out unit.

15 13. The board transferring apparatus according to claim 12, in which the component-mounted board production apparatus is arranged by a plurality of the number in series along the board transfer path, with the identifying device being disposed corresponding to each of the component-mounted board production apparatuses, whereby the
20 controller determines on the basis of the identification
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result whether or not the identified board is to be carried into the component-mounted board production apparatus and lets the identified board be transferred along the board transfer path in the transfer direction when determining that the identified board is not to be carried into the component-mounted board production apparatus.

14. The board transferring apparatus according to claim 13, which further comprises a recognizing device disposed corresponding to a component-mounted board production apparatus arranged to a trail end in the transfer direction among the plurality of the component-mounted board production apparatuses for recognizing a propriety of processing by the component-mounted board production apparatus for the board transferred along the board transfer path.

15. The board transferring apparatus according to claim 11, wherein the carry-in propriety display part is a mark preliminarily applied to the board.

16. A component mounting apparatus with the board transferring apparatus according to claim 11.

17. A board transfer method for transferring boards to a board transfer path and between the board transfer path and a component-mounted board production apparatus disposed along the board transfer path where the boards are transferred in a transfer direction, which comprises:

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identifying a carry-in propriety display part of
the board transferred along the board transfer path; and
determining on the basis of the identification
result whether or not the board is to be carried into the
component-mounted board production apparatus.

18. The board transfer method according to claim 17,
wherein, when it is determined that the board is to be
carried into the component-mounted board production
apparatus, the board is carried into the component-mounted
board production apparatus, processed by the component-
mounted board production apparatus and then carried out
from the component-mounted board production apparatus to
the board transfer path.

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